Paul C. Loikith

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Education

- **Ph.D.**, Rutgers University, New Brunswick, NJ. Atmospheric Science, 2012.
  Dissertation: *Characteristics of Atmospheric Circulation Patterns Associated with Extreme Temperatures over North America in Observations and Climate Models*. Advisor: Dr. Anthony J. Broccoli.

- **M.S.**, Rutgers University, New Brunswick, NJ. Atmospheric Science, 2010. Advisor: Dr. Anthony J. Broccoli

- **B.S.** (*with honors)*, Rutgers University, New Brunswick, NJ. Meteorology, 2007 (*Minor in Geography*).

Academic Employment:

Assistant Professor Begins 09/2015
Department of Geography
Portland State University, Portland, OR

Caltech Postdoctoral Scholar 10/2012-present
NASA Jet Propulsion Laboratory
Supervisor: Dr. Duane E. Waliser
JPL, Pasadena, CA

Graduate Assistant 09/2010-10/2012
Department of Environmental Sciences
Rutgers University, New Brunswick, NJ

Teaching Assistant 09/2007-05/2010
Department of Environmental Sciences
Meteorology Program
Rutgers University, New Brunswick, NJ

Grader 01/2008-05/2008
Remote Sensing of the Ocean and Atmosphere
Rutgers University, New Brunswick, NJ

Honors and Awards:

Academic Awards:

Meteorology Student of the Year, Rutgers University, New Brunswick, NJ, 2007.

Travel Awards:

International Conference on Regional Climate – CORDEX 2013, November 2013, Brussels, Belgium, **early career scientist travel grant recipient.**

WCRP Open Science Conference, October, 2011, Denver, CO, **student travel grant recipient.**

Graduate Climate Conference, October, 2010, Pack Forest Conference Center, WA, **student travel grant recipient.**

American Meteorological Society Annual Meeting, January, 2007, San Antonio, TX **student travel grant recipient**.

Articles in Refereed Journals:

Published or Accepted:

[12] **Loikith, P. C.**, D. E. Waliser, H. Lee, J. D. Neelin, B. R. Lintner, S. McGinnis, L. O. Mearns, and J. Kim, 2015: Evaluation of Large-Scale Meteorological Patterns Associated with Temperature Extremes in the NARCCAP Regional Climate Model Simulations, *Clim. Dyn.*, DOI 10.1007/s00382-015-2537-x.

[11] **Loikith, P.C.**, and A. J. Broccoli, 2015: Comparison between Observed and Model Simulated Atmospheric Circulation Patterns Associated with Extreme Temperature Days over North America using CMIP5 Historical Simulations. *J. Climate*, **28**, 2063-2079.

[10] **Loikith, P. C.**, D. E. Waliser, H. Lee, J. Kim, J. D. Neelin, B. R. Lintner, S. McGinnis, C. Mattmann, and L. O. Mearns, 2015: Surface Temperature Probability Distributions in the NARCCAP Hindcast Experiment: Evaluation Methodology, Metrics and Results. *J. Climate*, **28**, 978-997.

[9] Whitehall, K. C., C. Mattmann, G. Jenkins, M. Rwebangira, B. Demoz, D. Waliser, J. Kim, C. Goodale, A. Hart, P. Ramirez, M. Joyce, M. Boustani, P. Zimdars, **P. Loikith**, and H. Lee, Exploring a graph theory based algorithm for automated identification and characterization of large mesoscale convective systems in satellite datasets. *Earth Sciene Informatics*, DOI 10.1007/s12145-014-0181-3.

[8] Lee, H., J. Kim, D. E. Waliser, **P. C. Loikith**, C. A. Mattmann, and S. McGinnis, 2014: Evaluation of simulation fidelity for precipitation, cloud fraction and insolation in the North America Regional Climate Change Assessment Program (NARCCAP), *Clim. Dyn.*, DOI 10.1007/s00382-014-2253-y.

[7] Berg, A., B. R. Lintner, K. Findell, S. Malyshev, **P. C. Loikith**, and P. Gentine: Impact of soil moisture-atmosphere interactions on surface temperature distributions, *J. Climate,* **27**, 7976-7993.

[6] **Loikith, P. C.**, and A. J. Broccoli, 2014: The Influence of Recurrent Modes of Climate Variability on the Occurrence of Winter and Summer Extreme Temperatures over North America, *J. Climate*, **27**, 1600-1618.

[5] Mattmann, C. A., D. Waliser, J. Kim, P. Ramirez, C. Goodale, A. F. Hart, **P. Loikith**, H. Lee, M. Joyce, M. Boustani, S. Khudikyan, K. Whitehall, J. Whittel, P. Zimdars, D. Crichton, Y. Gil, and L. Cinquini, 2013: Model Evaluation Using the NASA Regional Climate Model Evaluation System (RCMES), *Earthzine*, **ESTO** Showcase 2013.

[4] Mattmann, Chris A., D. Waliser, J. Kim, C. Goodale, A. Hart, P. Ramirez, D. Crichton, P. Zimdars, M. Boustani, H. Lee, **P. Loikith**, K. Whitehall, C. Jack, and B. Hewitson, 2013: Cloud computing and virtualization within the regional climate model and evaluation system, *Earth Sci. Inform.*, DOI 10.1007/s12145-013-0126-2.

[3] **Loikith, P. C.**, B. R. Lintner, J. Kim, H. Lee, J. D. Neelin, D. E. Waliser, 2013: Classifying reanalysis surface temperature probability density functions (PDFs) over North America with cluster analysis, *Geophys. Res. Lett.*, **40**, doi:10.1002/grl.50688.

[2] Kim, J., D. E. Waliser, C. A. Mattmann, L. O. Mearns, C. E. Goodale, A. F. Hart, D. J. Crichton, S. McGinnis, H. Lee, **P. C. Loikith**, and M. Boustani, 2013: Evaluation of the Surface Air Temperature, Precipitation, and Insolation over the Conterminous U.S. in the NARCCAP Multi-RCM Hindcast Experiment Using RCMES, *J. Climate*, **26**, 5698-5715.

[1] **Loikith, P. C.**, and A. J. Broccoli, 2012: Characteristics of Observed Atmospheric Circulation Patterns Associated with Temperature Extremes over North America, *J. Climate*, **25**, 7266-7281.

Submitted, in review, or under revision:

[1] Behrangi A., **P. C. Loikith**, E. Fetzer, S. Granger, H. Nguyen, B. Lambrigsten: Surface temperature and humidity data to advance monitoring and prediction of meteorological drought, *submitted to Journal of Applied Meteorology and Climatology*.

In Preparation:

[1] **Loikith, P. C.**, J. D. Neelin: Short-tailed Temperature Distributions over North America and Implications for Future Changes in Extremes, *in preparation for Geophys. Res. Lett*.

Scientific Presentations:

Invited Talks:

[9] "Short-tailed Temperature Distributions over North America and Implications for Future Changes in Extremes," American Geophysical Union Fall Meeting, San Francisco, CA, December 16, 2014 (**oral presentation**).

[8] "Temperature Extremes over North America: Can regional climate models capture key features and physical mechanisms?" Portland State University, Portland, OR, November 17, 2014.

[7] "Observations: Key challenges, ongoing efforts, and future needs," WCRP WGRC Expert Meeting on Climate Information "Distillation," Santander, Spain, October 29, 2014.

[6] "Temperature Extremes and Associated Large-Scale Meteorological Patterns in NARCCAP Regional Climate Models," Argonne National Lab, Argonne, IL, July 11 2014.

[5] "The Regional Climate Model Evaluation System (RCMES): Introduction and Demonstration," WCRP VAMOS/CRODEX Workshop on Latin-America and Caribbean CORDEX LAC Phase II-Caribbean, Santo Domingo, April 7 2014.

[4] "Temperature Extremes over North America: Diagnosing and Evaluating Associated Meteorological Mechanisms," Stony Brook University, Stony Brook, NY, April 2 2014.

[3] "Diagnosing and Evaluating Meteorological Mechanisms Associated with Extreme Temperatures over North America in Global and Regional Climate Models," University of California Los Angeles, Los Angeles, CA, February 12 2014.

[2] “Extreme Temperatures over North America: Evaluating the Fidelity of Regional Climate Model Hincast Experiments”, University of California Los Angeles, Los Angeles, CA, May 9 2013.

[1] “Characteristics of Atmospheric Circulation Patterns Associated with Extreme Temperature Days over North America”, NASA Jet Propulsion Laboratory, Pasadena, California, June 8 2012.

At Scientific and Professional Meetings:

[23] “Temperature Extremes and Associated Large-Scale Meteorological Patterns in NARCCAP Regional Climate Models: Towards a framework for generalized model evaluation,” American Geophysical Union Fall Meeting, San Francisco, CA, December 2014 (**poster**).

[22] “Large Scale Meteorological Patterns Associated with Temperature Extremes in the North American Regional Climate Change Assessment Program (NARCCAP) Regional Climate Models,” 3rd Lund Meeting Regional-scale Climate Modeling Workshop, Lund Sweden, June 2014 (**oral presentation**).

[21] “Surface Temperature Probability Distributions and Extremes in the NARCCAP Hindcast Experiment: Evaluation Methodology and Metrics, Results, and Associated Atmospheric Mechanisms, American Meteorological Society Annual Meeting, Atlanta, GA, February 2014 (**oral presentation**).

[20] “Surface Temperature Probability Distributions in the NARCCAP Hindcast Experiment: Evaluation Methodology and Metrics, Results, and Associated Atmospheric Mechanisms,” American Geophysical Union Fall Meeting, San Francisco, CA, December 2013 (**oral presentation**).

[19] “Bayesian model averaging to evaluation regional temperature and precipitation in the United States,” American Geophysical Union Fall Meeting, San Francisco, CA, December 2013 (**co-author, oral presentation presented by Huikyo Lee**).

[18] “Evaluation and future projections of surface temperature distributions over South America,” American Geophysical Union Fall Meeting, San Francisco, CA, December 2013, (**co-author, oral presentation presented by Alex Goodman**).

[17] “Evaluation of Climate Model Data using the Regional Climate Model Evaluation System (RMCES): Application to Assessing the Impact of Climate Change on Hydrology,” American Geophysical Union Fall Meeting, San Francisco, CA, December 2013 (**co-author, oral presentation presented by Jinwon Kim**).

[16] “Temperature Extremes and Associated Meteorological Patterns in the NARCCAP Hindcast Experiment,” International Conference on Regional Climate – CORDEX 2013, Brussels, Belgium, November 2013, (**poster**).

[15] “Systematic Biases in the CORDEX-Africa and NARCCAP Multi-RCM Hindcast Experiment,” International Conference on Regional Climate – CORDEX 2013, Brussels, Belgium, November 2013, (**co-author, poster presented by Jinwon Kim**).

[14] “Evaluation of simulation fidelity for precipitation, cloud fraction and insolation in the North American Regional Climate Change Assessment Program (NARCCAP),” International Conference on Regional Climate – CORDEX 2013, Brussels, Belgium, November 2013, (**co-author, oral presentation presented by Huikyo Lee**).

[13] “Developing a systematic set of observations, diagnostics/metrics and tools for evaluating Regional Climate Models,” International Conference on Regional Climate – CORDEX 2013, Brussels, Belgium, November 2013, (**co-author, oral presentation presented by Duane Waliser**).

[12] “Scientific Applications of the Regional Climate Model Evaluation System (RCMES),” WCRP VAMOS/CORDEX Workshop on Latin-America and Caribbean CORDEX LAC: Phase I – South America, Lima, Perú, September 2013, **(oral presentation)**.

[11] “RCMES: A sustainable software tool for driving model evaluations and decision support in CORDEX communities,” WCRP VAMOS/CORDEX Workshop on Latin-America and Caribbean CORDEX LAC: Phase I – South America, Lima, Perú, September 2013, **(co-author, poster presented by Kim Whitehall)**.

[10] “Evaluating Extreme Temperatures and Associated Mechanisms in NARCCAP Hindcast Experiments,” U.S. CLIVAR Extremes Workshop, Berkeley CA, August 2013 **(poster)**.

[9] “Impact of land-atmosphere interactions on surface temperature distributions,” U.S. CLIVAR Extremes Workshop, Berkeley, CA, August 2013, **(co-author, poster presented by Benjamin R. Lintner)**.

[8] “The Influence of Recurrent Mode of Climate Variability on the Occurrence of Extreme Temperatures over North America,” American Metrological Society Annual Meeting, Austin, TX, January 2013 (**co-author, oral presentation given by Anthony J. Broccoli)**.

[7] “The Influence of Recurrent Modes of Climate Variability on the Occurrence of Extreme Temperatures over North America,” American Geophysical Union Fall Meeting, San Francisco, CA, December 2012 **(poster)**.

[6] “Atmospheric Circulation Patterns and Physical Processes Associated with Temperature Extremes over North America,” American Meteorological Society Annual Meeting, New Orleans, LA, January 2012 **(co-author, oral presentation given by Anthony J. Broccoli)**.

[5] “Key Atmospheric Circulation Patterns and Physical Processes Associated with Temperature Extremes over North America,” American Geophysical Union Fall Meeting, San Francisco, CA, December 2011 **(poster)**.

[4] “Atmospheric Circulation Patterns Associated with Temperature Extremes over North American in Observations and Models,” World Climate Research Programme Open Science Conference, Denver, CO, October 2011 **(poster)**.

[3] “Atmospheric Circulation Patterns and Physical Processes Associated with North American Temperature Extremes,” Climate and Earth System Modeling PI Meeting, U.S. Department of Energy, Washington, DC, September 2011 **(co-author, oral presentation given by Anthony J. Broccoli)**.

[2] “Identification of Atmospheric Circulation Patterns Associated with Observed Temperature Extremes over North America,” American Geophysical Union Fall Meeting, San Francisco, CA, December 2010 **(poster**).

[1] “Key Synoptic and Physical Processes Associated with Temperature Extremes over North America,” American Geophysical Union Fall Meeting, San Francisco, CA, December 2009 **(oral presentation)**.

Other Scientific Presentations:

[7] “Temperature Extremes in the North American Regional Climate Change Assessment Program (NARCCAP) Regional Climate Models: Towards a framework for systematic model evaluation,” Jet Propulsion Laboratory, Pasadena CA, July 2014 (**oral seminar**).

[6] “Extreme Temperature Events: Do models capture key features over North America?,” JPL Postdoc Poster Session, Pasadena CA, July 2013 **(poster)**.

[5] “Atmospheric Circulation Patterns Associated with Temperature Extremes Over North America in Observations and Models,” Princeton Geosciences Graduate Research Symposium, Princeton, NJ, November 2011 **(poster)**.

[4] “Identification of Key Atmospheric Circulation Patterns and Physical Processes Associated with Temperature Extremes over North America,” Rutgers University Environmental Science Graduate Student Association seminar, Rutgers University, New Brunswick, NJ, October, 2011 **(oral presentation)**.

[3] “Atmospheric Circulation Patterns Associated with Temperature Extremes Over North America,” Atmospheric Science Graduate Student Seminar Class, Rutgers University, New Brunswick NJ, November 2010 **(oral presentation)**.

[2] "Atmospheric Circulation Patterns Associated with Temperature Extremes over North America," 4th Graduate Climate Conference, Pack Forest Conference Center, WA, October 2010 **(oral presentation)**.

[1] "Global Warming and Climate Change," Rutgers University Environmental Science Graduate Student Association seminar, Rutgers University, New Brunswick, NJ, March 2009 **(oral presentation)**.

Grants:

[7] PI on NSF proposal entitled "Assessing and Understanding Climate Change over South America," *in preparation*.

[6] PI on NASA ROSES proposal entitled "A Gridded Climate Indicator for Extreme Precipitation over the Continental United States," *submitted*.

[5] Co-I on NOAA MAPP proposal entitled "Development, implementation, and validation of process-based metrics for land-atmosphere coupling," PI Benjamin Lintner, Rutgers University, *under review*.

[4] Co-I on NOAA MAPP proposal entitled "Multi-scale evaluation of key antecedent mechanisms and physical processes in the NMME system to enhance predictability of heatwaves and drought," PI Ali Behrangi, Jet Propulsion Laboratory, California Institute of Technology, *under review*.

[3] Co-I on NASA Advanced Information Systems Technology proposal entitled "SciSpark: Highly Interactive and Scalable Model Evaluation and Climate Metrics for Scientific Data and Analysis," with PI Chris Mattmann, Jet Propulsion Laboratory, California Institute of Technology, ***accepted for funding***.

[2] Co-I on NOAA proposal entitled "Collaborative research on moisture vertical structure and its relationship to South Pacific Convergence Zone (SPCZ) and broader tropical Pacific variability and biases from a hierarchy of models," with PI Benjamin Lintner, Rutgers University, *not funded*.

[1] Co-wrote a DOE proposal entitled "Investigating the Relationship Between Daily Temperature Extremes and Patterns of Climate Variability in Observations and Future Climate Simulations, with PI Anthony Broccoli, Rutgers University, ***funded 2010-2013***.

Reports:

Broccoli, A. J., M. B. Kaplan, **P. C. Loikith**, and D. A. Robinson, 2013: State of the Climate: New Jersey, *Rutgers Climate Institute*.

Membership in Professional Societies:

- American Geophysical Union
- American Meteorological Society
- American Association for the Advancement of Science

Teaching and Professional Development:

Teaching Experience:

Teaching Assistant: *Weather Analysis and Forecasting I: Synoptic Meteorology*, 2007, 2008, 2009, Rutgers University, New Brunswick, NJ.

Teaching Assistant: *Weather Analysis and Forecasting II: Mesoscale Meteorology*, 2008-2010, Rutgers University, New Brunswick, NJ.

Teaching Assistant: *Meteorological Analysis*, Rutgers University, New Brunswick, NJ.

Guest Lecturer: *Physical Principles of Environmental Sciences*, "Climate change, Earth's radiation budget, feedbacks, natural climate variability, and uncertainty," Spring 2012, Rutgers University, New Brunswick, NJ.

Guest Lecturer: *Climate Dynamics*, "Modes of climate variability," Fall 2011, Rutgers University, New Brunswick, NJ.

Students Mentored:

Danielle Groenen, Ph.D. student at Florida State University. Acting mentor (Duane Waliser official sponsor) for summer internship at JPL, Summer 2014.

Professional Development:

Participant: *Deconstruct your Science to Win Friends and Influence People: Working with funders, colleagues out of field, the public, policy makers, and K-12 audiences to share your science more broadly*, COSEE-NOW, May 2011, Rutgers University, New Brunswick, NJ.

Participant: *Introduction to College Teaching I*, Spring 2010, Rutgers University, New Brunswick, NJ.

Participant: *Communicating Ocean Sciences to Informal Audiences*, Spring 2009, Rutgers University, New Brunswick, NJ.

Participant: *Undergraduate Leadership Workshop*, June 2006, National Center for Atmospheric Research, Boulder, CO.

Service:

Professional:

Participant: WCRP Expert Meeting on Climate Information "Distillation." Santander, Spain, October 2014. *Invitation only*.

Organizer and facilitator: Regional Climate Model Evaluation System training session, 3rd Lund Regional-scale Climate Modeling Workshop, Lund Sweden, July 2014.

Participant: *WCRP VAMOS/CORDEX Workshop on Latin-America and Caribbean CORDEX LAC: Phase II – Caribbean*, Santo Domingo, Dominican Republic, April 2012.

Session Convener: "Novel Application of Observations to the Evaluation of Regional Climate Models," *American Geophysical Union Fall Meeting*, San Francisco, CA, December 2013.

Participant: *North America CORDEX Meeting*, June 2013, Boulder, CO.

Participant: *WCRP VAMOS/CORDEX Workshop on Latin-America and Caribbean CORDEX LAC: Phase I – South America*, Lima, Perú, September 2013.

Journal Reviewer: *Journal of Climate*, *Journal of Applied Meteorology and Climatology, Journal of Geophysical Research-Atmospheres, Bulletin of the American Meteorological Society, International Journal of Climatology, Climate Dynamics*

University:

Seminar Coordinator: Rutgers University, New Brunswick, NJ Environmental Sciences Graduate Student Assoc., 09/2011-06/2012. [Organized seminars given by students, faculty and guests].

Co-coordinator: *Workshop for Students on Communicating Climate Change*, Project Civility, Rutgers University, New Brunswick, NJ, March 2012.

President: Rutgers University Student Chapter of the American Meteorological Society, New Brunswick, NJ, 05/2006-05/2007.

Speaker: Climate change presentation as part of a Girl Scout Gold Award environmental education project, August 2007, Plainsboro, NJ.

Speaker: Presented talks on climate change to high school and middle school students in Stanhope and Springfield, NJ at school organized assemblies, Spring 2007.

Other:

Volunteer Judge: *Outstanding Student Paper,* December 2012, 2013, American Geophysical Union Fall Meeting, San Francisco, CA.

Volunteer Judge: *North Jersey Regional Science Fair*, New Brunswick, NJ, 03/2010, 03/2011, 03/2012.

Volunteer: *New York-New Jersey Trail Conference*, 01/2005-10/2012. [Hiking trail maintainer].

Research Projects:

Independent Study: "Investigating the Causes of Glacial Melt on Mount Kilimanjaro Using the GFDL CM2.1 Coupled Climate Model" Rutgers University, New Brunswick, NJ 2006-2007 academic year.